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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/848,830 | 05/03/2001 | Steven M. Zuniga | 2834/303002 | 9467 |

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05/09/2002

Patent Counsel
Applied Materials, Inc.
Legal Affairs Department
P.O. Box 450A
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EXAMINER

MACARTHUR, SYLVIA

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 05/09/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

FILE COPY
Office Action Summary

Application No.

09/848,830

Applicant(s)

ZUNIGA ET AL.

Examiner

Sylvia R MacArthur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3 6) ☐ Other:

DETAILED ACTION

Specification

1. Applicant is urged to update page 1 line 4 and reflect that the parent application S.N. 09/090,679 has been patented and is US 6,251,215.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claims 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The thickness of the substrate is unknown. If a different substrate is used the thickness is different.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo et al (EP 0776,730) in view of Kim and in further view of *Machine Design* and *DSM* publications.

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Kubo discloses a workpiece retaining device 8 as illustrated in Figure 2. The retaining device includes an assembly comprising a ring-shaped projecting portion 2, an assembly 12 including a retainer ring 4, a sheet-like ring 6 and a backup ring 5. Liquid resins include a solution of thermoplastic polymer, thermoplastic emulsion, a melt of thermoplastic polymer, and a mixture of a liquid thermosetting resin and curing agent. Such preferable resins include, for example, an epoxy resin, polyurethane, polyester, a fluoride resin, polyolefin, polyoxymethylene and polyamide. A mixture of a thermosetting resin and curing agent. The workpiece 7 is put on the surface 1a of the central portion 1 (substrate mounting portion).

The retainer ring 4 (lower portion) is formed of a material such as a fluoride resin, polyolefin, polyoxymethylene, and polyimide. The insert ring 6 (upper lower portion) is rigid and can be formed into various thicknesses. Preferable materials include epoxy resins, polyesters, and polyimides both filled with glass fiber. The retainer ring 4 can be chamfered or rounded at an outer edge to be contact with the polishing pad 11. The assembly 12 of the retainer ring 4, the backup ring 5 can be attached to a surface 2a of the projecting portion 2 by adhesive (adhesive attachment), and insert ring 6. Kubo illustrates the plastic portion of the ring to be thicker than the substrate. Both portions of Kubo's retention rings are annular.

Regarding claim 4, the dimensions of the lower portion are an obvious matter of design choice. According to, *In Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, and 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not

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patentably distinct from the prior art device.

Kubo fails to teach that the upper portion is specifically constructed with a metal.

- ◉ Kim teaches constructing a two-part retaining ring with plastic and metal (stainless steel).

The motivation to construct the retaining ring of Kubo with a metal such as stainless steel is that it possesses sufficient rigidity.

Both Kubo and Kim fail to teach that the plastic portion of the retaining ring has a durometer reading of between about 80 and 95 on the Shore D scale.

- ◉ The *Machine Design* and *DSM* publications teach the use of PPS in retaining rings.

Machine Design teaches that PPS provides continuous use up to 425 F, very low outgassing and chemical resistance. This citation provides the basis that PPS is inert to CMP.

DSM teaches Techtron PPS as a material to construct holding rings that retain wafers during CMP. The Material Property Comparison Table, Item 12, for Hardness, Durometer, Shore D scale, cites Techtron PPS as D85. *DSM* also cites that Techtron PPS withstands the chemical and mechanical stresses present during polishing.

The motivation to construct the plastic portion of the retaining ring with PPS is that this material is well known in the art of CMP equipment design to withstand the harsh environment of CMP as taught by *Machine Design* and *DSM*.

Regarding claim 9, inherently the elastic modulus of the metal is greater than that of the plastic PPS.

Thus, it would have been obvious for one of ordinary skill in the art of CMP equipment design to construct the two part retaining ring of Kubo with plastic and metal as suggested by

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Kim with PPS as preferred by Machine Design and DSM publications to withstand the harsh chemical and mechanical environment of CMP.

Kubo further fails to teach that the lower portion is made of a plastic having a durometer measurement between 80 and 95 on the Shore D scale.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 1-13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of U.S. Patent No. 6,251,215. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed invention requires a two-part retaining ring wherein the upper portion is made of metal more rigid than the plastic lower portion. The plastic lower portion has a hardness of between 80 and 95 on the Shore D scale.

In comparison, the patent also requires a two-part retaining ring wherein the upper portion is made of metal more rigid than the plastic lower portion. The type of material of the

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lower portion is specified as PPS having a hardness of between 80 and 95 on the Shore D scale.

The patent further requires that the upper and lower portion be attached by an epoxy.

The PPS and epoxy or adhesive attachment limitation are claimed in dependent claims of the present application.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R MacArthur whose telephone number is 703-306-5690.

The examiner can normally be reached on M-F during the hours of 7 a.m. and 1 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 703-308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Sylvia R. MacArthur
May 2, 2002



GREGORY MILLS
SUPERVISORY PATENT EXAMINER
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